

**REMARKS**

The Examiner's Action mailed on April 22, 2008, has been received and its contents carefully considered.

In this Amendment, Applicant has amended claims 2-5, canceled claim 1, and added claims 6-8. Claims 2, 3 and 6 are the independent claims. Claims 2-8 are pending in the application. For at least the following reasons, it is submitted that this application is in condition for allowance.

The Examiner has rejected claims 1-5 as being obvious over *Flemish et al.* (USP 6,159,884) (hereafter simply *Flemish*) in view of *Kitou et al.* (USP 5,944,890) (hereafter simply *Kitou*). Claim 1 has been canceled, rendering the Examiner's rejection pertaining thereto moot. It is submitted that claims 2-5 are *prima facie* patentably distinguishable over the cited references for at least the following reasons.

Claim 2 is directed to a method for producing a semiconductor device that includes a substrate, a susceptor of carbon and a heating member of carbon. The claimed method includes the step of contacting the heating member with a front surface of the substrate while the susceptor contacts with a rear surface of the substrate. The claimed method further includes the step of heat-treating the substrate with the heating member and the susceptor. Claim 2 has been further amended to recite that the susceptor has a surface coated by high purity carbon CVD, which is supported by the specification, paragraph [0029], lines 1-2. These features of the invention are not disclosed or suggested by the cited references.

*Flemish* is directed to an annealing method of a silicon wafer (see *Flemish*, Figure 1b). However, *Flemish* does not disclose or suggest that a front surface of the wafer contacts with an upper heat-treating element, and a rear surface of the wafer contacts with a lower heat-treating element, as would be required by claim 2. *Flemish* simply describes that a wafer is annealed by placing the wafer face-to-face with a **sacrificial piece** of SiC to impede the degradation of the material (see col. 1, lines 53-55). Moreover, as shown in Figure 1b of *Flemish*, only a **single** surface (i.e., the lower surface) of the wafer 22 is in face-to-face contact with a crucible 10, and the upper surface of the wafer 22 is spaced apart from the lid 24. Thus, *Flemish* does not disclose or suggest that the front and rear surfaces of the wafer respectively contact with separate heat-treating elements, as specified by claim 2.

In addition, *Flemish* does not disclose or suggest that the wafer 22 is heat-treated with an upper-contacting element **and** a lower-contacting element, as would be required by claim 2.

Further, as acknowledged by the Examiner, *Flemish* does not disclose a heating member of **carbon** or a susceptor of **carbon**, as recited in claim 2.

The Examiner further relies on *Kitou*. *Kitou* is directed to a method of producing a single crystal, which includes forming a protection layer 8 and a seed crystal layer 4. However, only a single surface (i.e., the upper surface) of the seed crystal layer 8 contacts with the protection layer 8 (see Figure 3B). *Kitou* does not

disclose or suggest that the front and rear surface of the seed crystal layer 4 respectively contact with separate heat-treating elements, as would be required by claim 2. Therefore, *Kitou* does not overcome the above-noted deficiencies of *Flemish*.

Further, there is no disclosure or suggestion that *Kitou*'s protection layer 8 has a surface coated by high purity carbon CVD. In contrast, the claimed susceptor has a surface coated by high purity carbon CVD; therefore the substrate can be brought into more intimate contact with the susceptor, and contamination of the substrate with impurities can be advantageously prevented (see the specification, paragraph [0029]).

It is thus submitted that claim 2 is *prima facie* patentably distinguishable over the cited references. It is thus requested that these rejections be withdrawn and that these claims be allowed.

Independent claim 3 is directed to a method for producing a semiconductor device that includes a heating member of carbon, and a substrate whose front surface of the substrate is selectively ion-implanted with an impurity element. The claimed method includes the step of bringing the heating member of carbon into contact with the ion-implanted front surface of the substrate, and the substrate is heat-treated with the heating member that is contact with the ion-implanted front surface.

However, *Flemish* does not disclose or suggest that an ion-implanted surface of the wafer 22 contacts with any heat-treating element. Figure 1b shows

the wafer in the crucible 10 simply, but does not disclose or suggest that the lower surface is an ion-implanted surface.

The Examiner equates *Kitou's* protective layer with the claimed heating member, asserting that the protective layer aids in the heating. However, *Kitou* only describes that the protection layer has a heat **insulation effect**, whereby the temperature gradient and the temperature distribution are further suppressed (see col. 3, lines 15-17). Thus, *Kitou's* protection layer that **insulates** heat can not be the claimed **heating** member for heat-treating (i.e., heating) the substrate.

Claim 3 further recites that a susceptor of carbon serves as the heating member, and the substrate is heat-treated with the heating member. Claim 3 has been further amended to recite that the susceptor has a surface coated by high purity carbon CVD, as is identically recited in claim 2. Neither *Flemish* nor *Kitou* discloses or suggests any susceptor that has a surface coated by high purity carbon CVD.

Thus, independent claim 3, and claims 4 and 5 that depend therefrom, are *prima facie* patentably distinguishable over the cited references.

New claims 6-8 have been added. Independent claim 6 recites holding the substrate by a susceptor of carbon with a rear surface of the substrate in contact with the susceptor, bringing a heating member of carbon into contact with the front surface of the substrate selectively ion-implanted with an impurity element, and heat-treating the substrate with the heating member and the

susceptor, which are similarly recited in claim 2. Accordingly, claim 6, and claims 7 and 8 that depend therefrom, are *prima facie* patentably distinguishable over the cited references for at least the same reasons as independent claim 2, as well as for the additional features recited therein. It is requested that the claim be allowed and that this rejection be withdrawn.

It is submitted that this application is now in condition for allowance. Such action and the passing of this case to issue are requested.

Should the Examiner feel that a conference would help to expedite the prosecution of the application, the Examiner is hereby invited to contact the undersigned counsel to arrange for such an interview.

Should any fees be required, the Commissioner is hereby authorized to charge such fees to our deposit account No. 18-0002, and is requested to advise us accordingly.

Respectfully submitted,



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Date

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